

We Claim

1. A method for filling a cartridge (6) with a liquid, characterised by the steps

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a) lowering a filling needle (5) into the cartridge (6),

b) feeding liquid through the filling needle (5) into the cartridge (6),

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c) detecting when the cartridge (6) is filled to its edge,

d) stopping the liquid flow when the cartridge (6) is detected as being full by allowing an excessive amount of liquid to form a drop over at the edge of the cartridge (6), and

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wherein c) the detection comprises the following two steps:

c1) sending a beam of light from one side of the cartridge (6) to the other along a path immediately over an upper edge of the cartridge (6), and

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c2) reflecting the light beam back.

e) lifting the filling needle (5) out of the cartridge (6).

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2. A method according to claim 1, characterised in that the filling step comprises a prefilling step and a topping up step.

3. A method according to claim 2, characterised in that the lowering of the filling needles (5) and the prefilling step is so adjusted, that the needle tip is below the surface (17) of the liquid when the topping up step is started.

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4. A method according to claim 1, characterised in that a full cartridge is detected by changes in a light beam passing immediately over the upper edge of the cartridge (6).

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5. A method according to claim any one of the preceding claims, characterised in that the topping up of the cartridge (6) is so adjusted that the amount of liquid exceeding the volume of the cartridge (6) and forming a drop over at the edge of the cartridge (6) corresponds to the amount of liquid displaced by the part of filling needle (5) projecting into the cartridge (6).

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6. An apparatus for implementing the method for filling a cartridge (6) with a liquid, comprising

10 b) means for controlled feeding of liquid through the filling needle (5) into the cartridge (6),

 c) means for detecting when the cartridge (6) is filled to its edge, and

15 d) means for stopping the liquid flow when the cartridge (6) is detected as being full,

characterised in that the apparatus further comprises

20 a) means for lowering a filling needle (5) into the cartridge (6), and

 e) means for lifting the filling needle (5) out of the cartridge (6)

25 wherein c) the means for detection of a filled cartridge comprises a sensor head (10) from which a beam of light from a light source is sent from one side of the cartridge (6) to the other along a path immediately over an upper edge of the cartridge (6), and a reflector (11) reflecting the light beam back to the sensor head (10).

30 7. An apparatus according to claim 6, characterised in that the means for feeding liquid through the filling needle (5) into the cartridge (6) is a motor driven pump (1).

35 8. An apparatus according to claim 6, characterised in that the light source and a detector, which detects the light reflected from the reflector (11) back into the sensor head (10), are

enclosed in a sensor box (12) and communicates with the sensor head (10) through light conductors.

9. An apparatus according to claim 6 characterised in that the motor (7) driving the pump (1)
5 is energised from a control box (9) receiving signals from the sensor box (12).